## Great savings through improved pump control

Extended service life for the high-pressure pump, no need for motor-operated valves plus reduced pipe-installation dimensions all contribute to savings of over SEK 50,000 when renovating a pump in a pump station.

"By using a new type of soft starter, we have been able to reduce the costs of our mechanical installations," says Lasse Kjellstedt, Process Technician at Boden Municipality. That brings with it the added bonus of lower subscriber fees for electricity.
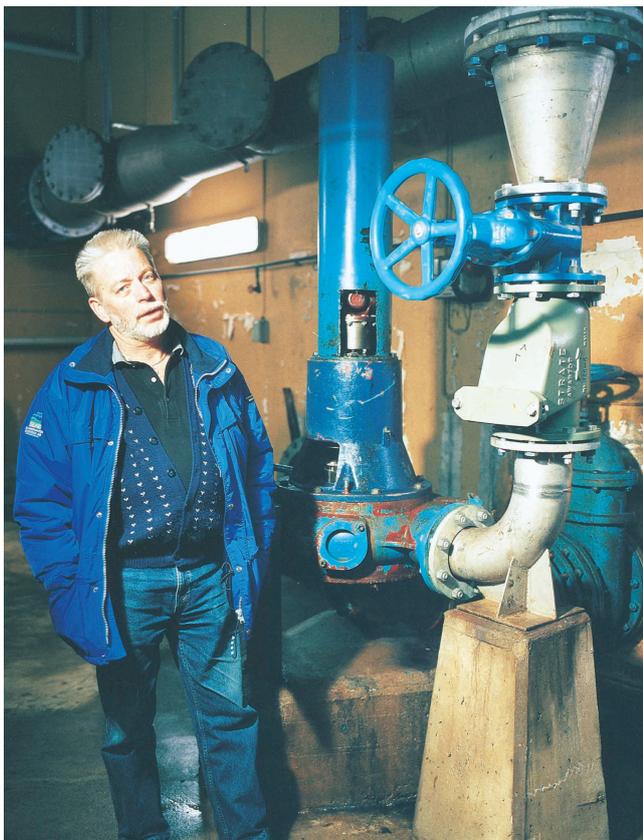
"Thanks to the new soft starters, we have been able to progress from motor-operated valves to regular reverse valves," explains Lasse Kjellstedt, Process Technician at the Boden Municipal Water and Sewage Works.

A common problem when pumping waste water is what's known as water hammer effect when the pump is stopped. The higher the pressure on the water, the more troublesome the water hammer effect becomes.

"We evaluated different types of soft starters before we settled on these," explains Lasse Kjellstedt. "We now have an 'electrical' solution to a mechanical problem. By connecting an Emotron MSF soft starter to the pump motor, we can now stop a high-pressure pump so gradually that it's hardly audible when the reverse valve closes - something that increases its service life significantly."

Multiple motor drives

The Water and Sewage Works in Boden is responsible for treating the waste water from a widespread area inhabited by approximately 30,000 people. In all, over 5.5 million m3 of waste water were treated at 11 sewage works and 170 pump stations in the area during 1999. This means approximately 470 motor drives for operating pumps, fans, tank agitators, sludge scrapers, etc. Up to now, only a few of them have been equipped with soft starters.

"For the pump stations, the upcoming installation of MSF soft starters means great potential for future savings," is the opinion of Lasse Kjellstedt. "We don't need to install motor-driven valves anymore, and we have no pressure surges resulting in expensive burst pipes. In addition, mechanical wear on the shafts and bearings in our pumps is eliminated. A broken pump shaft costs in the region of SEK 15,000 to replace. Seen from that perspective,

a soft starter is an inexpensive investment.

"Electricity costs are also reduced. Since the soft starters decrease the starting current needed by just over 50%, we can downgrade the main fuses.

"In the Sävast P92 pump station, for instance, we

"In one pump station we have been able to convert from 250 A to 125 A because the soft starter reduces the starting current for the motor by about 50-70%. This results in annual subscription-fee savings of approximately SEK 20,000," explains Nils-Erik Eriksson from the Technical Administration Department of Boden Municipality.

are converting from 250 A to 125 A. That gives us a saving of SEK 20,000 in reduced subscription fees, which will pay off the investment within a year."

Easy installation

In another pump station, an MSF has been installed on each of two 13.5 kW pump motors. Everything needed for monitoring and remote alarm via mobitex is contained in a small electrical cabinet.

"Despite having a twelve-metre head of water, you can hardly hear it when a pump stops and a reverse valve closes," exclaims Lasse Kjellstedt, who is also very positive about the approaching work on commissioning.

"Different start and stop times have to be set for each pump station, so we use the dual ramp start/ stop, which means we always find the optimum functioning capacity for the pump in question. The detailed and easy to read manuals make it easy to understand and adjust the necessary settings for the soft-start equipment. We install everything ourselves and even construct the cabinets for the automatic systems," conclude Lasse Kjellstedt and his colleague, Nils-Erik Eriksson.

Electrical installation is extremely easy and cheap with the built-in safety functions. A small electrical cabinet is all that's needed for a complete system with monitoring and remote alarm via mobitex.